IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Express Mail No.: EL627426221US

In re Application of: AKOPIAN et al.

FILING DATE: Herewith ART UNIT:

TITLE: METHOD IN A RECEIVER AND A RECEIVER

ATTORNEY DOCKET NO.: 460-010242-US(PAR)

The Commissioner of Patents and Trademarks

Washington, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

Please amend the above-identified, enclosed patent application as follows:

IN THE CLAIMS

On page 23, after the heading CLAIMS, please insert the following:

--What is claimed is--

Please amend Claims 4, 5, 6, 11, 12, 13, 18, 19 and 20 as rewritten below:

4. The method according to claim 1, **characterized** in that the received signal is sampled for producing a set of samples (x_n), a matrix (X) is formed from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period, and that the second estimation phase having the steps of performing a first time-to-frequency transform on the matrix (X) in said second direction, and performing a second time-to-frequency transform on the time-to-frequency transformed matrix (X) in said first direction.

5. The method according to claim 1, **characterized** in that the received signal is sampled for producing a set of samples (x_n), a matrix (X) is formed from the

samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of chips of the code, a compensation matrix (C) is formed, and that the second estimation phase having the steps of performing a first time-to-frequency transform on the matrix (X) in said second direction, multiplying the time-to-frequency transformed matrix (X) with the compensation matrix (C) to form a compensated matrix (CX), and performing a second time-to-frequency transform on the compensated matrix (CX) in said first direction.

6. The method according to claim 4, **characterized** in that a time-to-frequency transform is performed on the reversed replica code (r), the time-to-frequency transformed replica code (R) is multiplied with the resulting matrix of the second time-to-frequency transformation, a frequency-to-time transform is performed on the resulting matrix of the multiplication.

11. The location system according to claim 8, **characterized** in that it comprises
- means (5) for sampling the received signal for producing a set of samples (x_n),
- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (12) for performing a first time-to-frequency transform on the matrix (X) in said second direction, and
- means (15) for performing a second time-to-frequency transform on the time-to-frequency transformed matrix (X) in said first direction.

12. The location system according to claim 8, **characterized** in that it comprises
- means (5) for sampling the received signal for producing a set of samples (x_n),
- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (13) for forming a compensation matrix (C),
- means (14) for multiplying the time-to-frequency transformed matrix (X) with the compensation matrix (C) to form a compensated matrix (CX), and
- means (15) for performing a second time-to-frequency transform on the compensated matrix (CX) in said first direction.

13. The location system according to claim 11, **characterized** in that it comprises
- means (18) for forming a time-to-frequency transformed reversed replica code (R),
- means (14) for multiplying the time-to-frequency transformed reversed replica code (R) with the resulting matrix of the second time-to-frequency transformation, and
- means (15) for performing a frequency-to-time transform is performed on the resulting matrix of the multiplication.

18. The receiver (1) according to claim 15, **characterized** in that it comprises
- means (5) for sampling the received signal for producing a set of samples (x_n),

- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (12) for performing a first time-to-frequency transform on the matrix (X) in said second direction, and
- means (15) for performing a second time-to-frequency transform on the time-to-frequency transformed matrix (X) in said first direction.

19. The receiver (1) according to claim 15, **characterized** in that it comprises
- means (5) for sampling the received signal for producing a set of samples (x_n),
- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (13) for forming a compensation matrix (C),
- means (14) for multiplying the time-to-frequency transformed matrix (X) with the compensation matrix (C) to form a compensated matrix (CX), and
- means (15) for performing a second time-to-frequency transform on the compensated matrix (CX) in said first direction.

20. The receiver (1) according to claim 18, **characterized** in that it comprises
- means (18) for forming a time-to-frequency transformed reversed replica code (R),
- means (14) for multiplying the time-to-frequency transformed reversed replica code (R) with the resulting matrix of the second time-to-frequency transformation, and
- means (15) for performing a frequency-to-time transform is performed on the resulting matrix of the multiplication.

REMARKS

In accordance with 37 C.F.R. §1.121 (as amended on 11/7/2000) the rewritten claim(s) above are shown on separate page(s) marked up to show all the changes relative to the previous version of that section.

Respectfully submitted,

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4 April 01
Date

Application entitled: METHOD IN A RECEIVER AND A RECEIVER

MARKED UP CLAIM(S)

4. The method according to ~~any one of the claims 1, 2 or 3~~claim 1, ~~—~~**characterized** in that the received signal is sampled for producing a set of samples (x_n), a matrix (X) is formed from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period, and that the second estimation phase having the steps of performing a first time-to-frequency transform on the matrix (X) in said second direction, and performing a second time-to-frequency transform on the time-to-frequency transformed matrix (X) in said first direction.

5. The method according to ~~any one of the claims 1, 2 or 3~~claim 1, ~~—~~**characterized** in that the received signal is sampled for producing a set of samples (x_n), a matrix (X) is formed from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of chips of the code, a compensation matrix (C) is formed, and that the second estimation phase having the steps of performing a first time-to-frequency transform on the matrix (X) in said second direction, multiplying the time-to-frequency transformed matrix (X) with the compensation matrix (C) to form a compensated matrix (CX), and performing a second time-to-frequency transform on the compensated matrix (CX) in said first direction.

6. The method according to ~~any one of the claims 4 or 5~~claim 4, ~~—~~**characterized** in that a time-to-frequency transform is performed on the reversed replica code (r), the time-to-frequency transformed replica code (R) is multiplied with the resulting matrix of the second time-to-frequency transformation, a frequency-to-time transform is performed on the resulting matrix of the multiplication.

11. The location system according to ~~any one of the claims 8, 9 or 10~~claim 8, **characterized** in that it comprises

- means (5) for sampling the received signal for producing a set of samples (x_n),
- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (12) for performing a first time-to-frequency transform on the matrix (X) in said second direction, and
- means (15) for performing a second time-to-frequency transform on the time-to-frequency transformed matrix (X) in said first direction.

12. The location system according to ~~any one of the claims 8, 9 or 10~~claim 8, **characterized** in that it comprises

- means (5) for sampling the received signal for producing a set of samples (x_n),

- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (13) for forming a compensation matrix (C),
- means (14) for multiplying the time-to-frequency transformed matrix (X) with the compensation matrix (C) to form a compensated matrix (CX), and
- means (15) for performing a second time-to-frequency transform on the compensated matrix (CX) in said first direction.

13. The location system according to ~~any one of the claims 11 or 12~~claim 11, **characterized** in that it comprises

- means (18) for forming a time-to-frequency transformed reversed replica code (R),
- means (14) for multiplying the time-to-frequency transformed reversed replica code (R) with the resulting matrix of the second time-to-frequency transformation, and
- means (15) for performing a frequency-to-time transform is performed on the resulting matrix of the multiplication.

18. The receiver (1) according to ~~any one of the claims 15, 16 or 17~~claim 15, **characterized** in that it comprises

- means (5) for sampling the received signal for producing a set of samples (x_n),
- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (12) for performing a first time-to-frequency transform on the matrix (X) in said second direction, and
- means (15) for performing a second time-to-frequency transform on the time-to-frequency transformed matrix (X) in said first direction.

19. The receiver (1) according to ~~any one of the claims 15, 16 or 17~~claim 15, **characterized** in that it comprises

- means (5) for sampling the received signal for producing a set of samples (x_n),
- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (13) for forming a compensation matrix (C),
- means (14) for multiplying the time-to-frequency transformed matrix (X) with the compensation matrix (C) to form a compensated matrix (CX), and
- means (15) for performing a second time-to-frequency transform on the compensated matrix (CX) in said first direction

20. The receiver (1) according to any one of ~~the claims 18 or 19~~claim 18, **characterized** in that it comprises

- means (18) for forming a time-to-frequency transformed reversed replica code (R),

- means (14) for multiplying the time-to-frequency transformed reversed replica code (R) with the resulting matrix of the second time-to-frequency transformation, and
- means (15) for performing a frequency-to-time transform is performed on the resulting matrix of the multiplication.